

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
14 July 2005 (14.07.2005)

PCT

(10) International Publication Number
WO 2005/064662 A3

(51) International Patent Classification⁷: **H01L 21/265, 21/20**

(21) International Application Number:
PCT/IB2004/052753

(22) International Filing Date:
10 December 2004 (10.12.2004)

(25) Filing Language: **English**

(26) Publication Language: **English**

(30) Priority Data:
03104871.3 22 December 2003 (22.12.2003) EP

(71) Applicant (for all designated States except US): **KONINKLIJKE PHILIPS ELECTRONICS N.V. [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).**

(72) Inventor; and

(75) Inventor/Applicant (for US only): **PAWLAK, Bartłomiej, J. [PL/BE]; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).**

(74) Agents: **ELEVLED, Koop, J. et al.; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).**

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

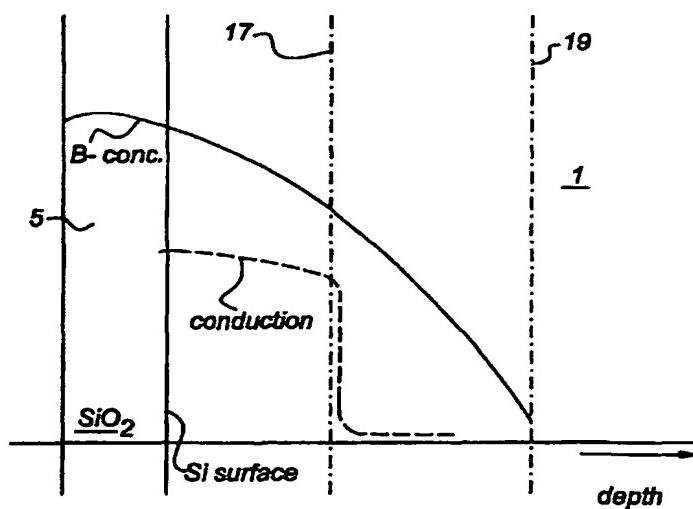
Published:

— with international search report

(88) Date of publication of the international search report:
27 October 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **A SEMICONDUCTOR SUBSTRATE WITH SOLID PHASE EPITAXIAL REGROWTH WITH REDUCED DEPTH OF DOPING PROFILE AND METHOD OF PRODUCING SAME**



(57) Abstract: Method of producing a semiconductor device, comprising: a) providing a semiconductor substrate, b) providing an insulating layer on a top surface of the semiconductor substrate, c) making an amorphous layer in a top layer of said semiconductor substrate by a suitable implant, d) implanting a dopant into said semiconductor substrate through said insulating layer to provide said amorphous layer with a predetermined doping profile, said implant being performed such that said doping profile has a peak value located within said insulating layer, e) applying a solid phase epitaxial regrowth action to regrow said amorphous layer and activate said dopant.